Nutrition News

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CENTRAL FILE

WEIGHT CONTROL AS A BIOLOGICAL PROCESS

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The control of body weight takes place automatically in many individuals who give no thought whatever to calories or how much they eat. This not only happens to individuals nowadays; it has happened for countless centuries even among aboriginal peoples who never heard of calories. This has happened likewise in the animal kingdom where members of different species maintain their weights at healthy levels without any planning whatever.

The appestat or regulatory mechanism which functions effectively in many individuals even under modern living conditions may regulate with remarkable precision. It may cause an individual who assimilates and burns up, in the course of 20 years, 4 tons of food (dry weight) to consume only 6 pounds above the 4 tons (average of $\frac{1}{10}$ oz. extra per week) to cause a gain in body weight of 10 pounds. This is an "error" of not more than about 0.07 percent. An error in this regulatory mechanism of 0.5 percent would cause a weight gain (or loss) in 20 years of about 70 pounds.

The "Why" of Obesity

It is a well recognized fact, however, that some adults have a predisposition or tendency toward obesity, others have the opposite tendency, namely to be emaciated or "skinny." The tendency toward obesity is of more concern than the opposite one because extra weight puts a heavy burden on the heart and is associated with decreased length of life. The tendency toward obesity may be possessed by individuals throughout life; on the other hand it may follow various patterns of change from one age to another.

What makes certain individuals tend toward obesity while others do not? "They eat too much" is a common answer. But why do they eat too much? There must be something wrong with their appetite regulating mechanism, however it works or wherever it may be located. The mechanism still works but tends to err on the side of slightly too much food consumption.

What can be wrong with this mechanism? There are several answers: (1) the mechanism may be genetically deficient, (2) it may be "poisoned" or have its activity impaired by some agent of endogenous or exogenous origin, (3) the cells and tissues involved (probably in the hypothalmus) may be malnourished. Actually these answers are not mutually exclusive. A genetic weakness may make the appestat susceptible to deleterious agents, and it may be malnourished because of unusual needs of genetic origin. Malnourishment may in turn cause tissues to be easily "poisoned," for example by hormonal agents which may arise in the body as a result of emotional stress.

Diets, Metabolism and Hormones

Weight control is a natural process, and if it does not function in a certain individual, the ideal solution is to bring back his or her regulating mechanism into good working order so that it is as easy for the individual to eat the right amount as it would be difficult to eat too much. Eating carefully planned restricted diets and carefully counting one's calories is at best a stop-gap procedure, which in most cases and in the long run is not conspicuously effective.

When we have studied in detail the metabolism and hormonal patterns of obese individuals as compared with others who have no tendency in this direction, we may be able to find the real roots of their trouble and to modify their nutrition in such a way as to bring about healthy appetite regulation. Exercise and the psychological effect of recreation are probably important factors in maintaining healthy regulating mechanisms. Obesity, however, is often associated with a disinclination to exercise physically, and as a result a vicious cycle may develop.

Dr. Williams

Nutritional Individuality

There is a great deal more to nutrition than appears on the surface. Good nutrition is not only necessary for "the body as a whole," but is necessary for all the parts as well. Among these parts are the cells and tissues which are concerned with regulation of food consumption. It seems that the best chance of solving the problem which obese people have, lies in the possibility of improving the nutrition of these cells and tissues. Because of genetic differences individuals necessarily have nutritional requirements that are quantitatively not the same. This we need to know more about. Special cells and tissues may have their special requirements too, and these may be distinctive for each individual.

Until we become acquainted with individual differences in metabolism and hormonal patterns we are not in a favorable position to ascertain just what is wrong in obese individuals, and we can hardly hope to conquer their problem unless by happy accidents. Their problem will not be completely solved until their food consumption is regulated internally by mechanisms that they do not have to worry about.

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Glances AT NUTRITION RESEARCH

Estimates of energy intakes and expenditures continue along with studies on why people overeat; how to help them overcome excessive eating; and what resulting obesity does to physical and emotional health.

Energy expenditure related to age—Women's energy expenditures have been estimated to decrease by 3% from ages 25-35, 35-45, and 45-55. This estimate is based on a study of calorie intakes and expenditures of 12 well-matched middle-aged, middle-class housewives and their adult working daughters. The mothers consumed an average of 2100 and used up 2090 calories each day. The daughters consumed an average of 2225 and used up 2255 calories each day.

—Brit. J. Nut. 11:85 (No. 1) 1957.

Mechanism to control eating—Increase in body heat from ingested food, by stimulating the satiety center of the hypothalamus, may inhibit eating. Whenever metabolic rate fell below 1.2 calories per minute, one subject was hungry. When above this rate after eating, hunger disappeared.

—Brit. J. Nut. 11:79 (No. 1) 1957.

Physiology of hunger—Caloric undernutriture appears to result in stronger physiologic manifestation of hunger than does any proposed mechanism for control of eating. In calorie undernutrition, gastric hunger contractions persisted in an unconscious man with severe brain injury despite pleasant and unpleasant outside stimuli and despite separate intravenous feedings of glucose, fat and amino acids. When 2100 additional calories were supplied daily, previously ineffective agents were able to inhibit gastric motility more nearly as in normal individuals.

—Amer. J. Clin. Nut. 5:203 (Mar.-Apr.) 1957.

Therapy of obese children—The improvement in physical and emotional condition of obese boys and girls with loss of excess body weight has been reported. Thirty boys averaging 11.1 years and 136.5 pounds and 30 girls averaging 12.2 years and 141.6 pounds, in four months, lost an average of 19.5 and 12.1 pounds, respectively. The children were given diets allowing between 1025 and 1310 calories per day. Appetite depressants were used when needed. After weight loss, obesity tended to return unless follow-up visits continued. This suggests that an abnormal desire for food may have a physiological origin.

—Amer. J. Clin. Nut. 5:1 (Jan.-Feb.) 1957.

More hypertension among obese—Among 3,508 young adult students, 979 were found to be obese. Only 4.9 percent of the non-obese students were hypertensive (blood pressure 140/90 mm. mercury or above). Among the obese, 11.3 percent were hypertensive. More men were obese than were women. Of the obese, more men were hypertensive than women. More Americans were hypertensive than were foreign students. This difference narrowed with increasing years of foreign students in this country. There was no difference in amount of obesity between American and foreign students.

—Amer. J. Clin. Nut. 5:274 (May-June) 1957.

Dr. Roger J. Williams

Dr. Williams is the author of many technical papers and textbooks in the field of organic and bio-chemistry. His most recent work "Bio-chemical Individuality," was published in 1956 by John Wiley and Sons. Roger Williams received his B.S. degree from the University of Redlands, California; his doctorate from the University of Chicago. Notable among his successes in the field of research is the discovery of pantothenic acid.

Dr. Williams is a member of the National Academy of Sciences. He is currently president of the American Chemical Society.

Radioactivity in Food

The Argonne National Laboratory has measured and reported the radiation level from strontium-90 now reaching the people of the U.S.A. as less than one percent of the amount of radiation known to be harmful.

Strontium-90 reaches us by way of calcium consumption. Milk and dairy foods are major sources of this mineral, but many other foods contain various amounts of calcium. A "rad" is the unit measure of radiation reaching the human skeleton. The present maximum amount of detected radiation in any child's bones would, if continued over a seventy year span, yield only two-tenths of a rad unit. Our skeletons contain an amount of the weakly radioactive forms of natural potassium and carbon equal to five times this amount in a lifetime. Add to this the 7 to 15 rads from cosmic rays and other lifetime sources.

We have a long way to go before the presence of strontium-90 in milk and other foods can catch up with the amounts of radioactivity we have been exposed to through natural sources.

EDUCATIONAL TV SPURS A WEIGHT CONTROL PROGRAM

By Emily Deethardt, Clinic Nutritionist
The Medical School Clinics, Northwestern University

Almost everyone is interested in weight control. Workshops are held to discuss it, hundreds of scientific articles are published, magazines feature low-calorie diets, papers advertise pills and stores display "diet" foods.

In spite of all this interest, usually only a small percentage of overweight people who have started on a weight control program have lost an appreciable number of pounds, and often the weight loss is regained within a few years. Many factors enter into this problem. It may often be due to a lack of basic nutrition teaching and continued support to the patient.

Nutrition education is needed to help the overweight person plan a sound, long-term program, and to lend continued sympathetic support as the diet progresses. How can this be done? Can television be used effectively?

The Chicago Nutrition Association chose this media for a nutrition education project, using weight control as the subject to be featured. A committee made arrangements with Chicago's educational television station, WTTW. The number of programs and their length were considered by the committee in the development of content and the manner of presentation. The plans were sent for review and suggestions to a number of people in the field of nutrition education. The outlines were then rechecked and suitable changes made.

Sub-committees worked independently to develop a script for each of the three one-half hour programs. The general committee then reviewed the scripts, and little change was needed to combine them into a well-integrated series.

Consideration was given to using professional actors in the roles of patient, patient's wife and nutritionist. Since this was an educational program, it was decided to keep the entire production "authentic" in order to carry conviction. Due to the flexibility needed in television work, it was also thought that a person actually trying to lose weight, and a nutritionist working with this person would be better able to adjust to emergency changes in programming.

The participants so thoroughly familiarized themselves with the script that if the specific wording was forgotten, the content could be expressed in their own words. The cast practiced, individually and together, to become familiar with the special limitations of television. A public health physician served as master of ceremonies to introduce the program and to explain its purpose.

The first program portrayed taking the diet history and the development of a weight reduction program based on the patient's present dietary habits and individual needs. His wife also participated in the interview.

In the second program the patient reported progress. He and his wife raised questions on such things as planning for the pre-teen child in the family, choosing meals when eating out, exercise and special dietary foods.

The third program consisted of a brief interview with the patient and his wife. Party snacks were discussed and the values of continued good dietary habits were stressed as the basis of permanent weight control. The rest of the program was devoted to a panel of qualified persons who answered questions sent in by the viewers. The programs were made interesting and graphic by the use of food models and weighing the patient before the camera. A pamphlet, developed by the American Dietetic Association, on weight reduction was offered on each program—not only for its value to the reducer, but also to aid in evaluating the effectiveness of the program. Over five thousand requests for the pamphlet were received.

The letters received also indicated that people of many occupations and economic levels had seen the programs. The desire of people for authentic information was evidenced by the following "typical" comment: "This is the first time I ever had weight reduction explained to me in a sensible way." The viewer tended to identify himself with the patient being interviewed, and to feel that the comments, suggestions and encouragement given were meant for him.

The results of the venture far exceeded the expectations of the committee and the television staff. Can television be used effectively in nutrition education? The Chicago Nutrition Association believes it can.

TEEN-AGERS AND HOW THEY EAT

By Izola Williams, Chief of Nutrition
Ohio Department of Health, Columbus, Ohio

Older generations for years have been somewhat aghast at the food habits of teen-agers in regard to quantities of food consumed and food combinations. Teen-agers, on the other hand, have apparently enjoyed shocking the older folk by exaggeration of food foibles and have adopted poor practices occasionally as a means of asserting independence. Nutritionists often have wondered whether teen-age habits were really as poor as parents and teachers believed them to be.

Ohio Department of Health nutrition consultants were given an opportunity to learn more about the eating patterns of Ohio's teen-agers when they assisted seventy public and parochial schools in making food habit surveys of pupils in upper elementary and high school grades. More than 5000 children were included in the studies and about one-fifth of these were in the teen years. These surveys were made by the one-day recall method, then coded and summarized under the supervision of the nutrition consultants assisted by health department statisticians.

The most important findings of this analysis are as follows: 1) Only one-half of these boys and girls drank as much as three glasses of milk per day. 2) Only about 45 percent ate a green or yellow vegetable daily. 3) Less than one-half had a good source of Vitamin C daily. 4) Almost 70 percent of the students had at least one food of the

(Continued on Page Twenty-four)

—that scientists are now using radioactive tracers to study the development of milk in cows?

—that Dr. Roger Williams' research indicates appetites and abnormal cravings, like the craving for alcohol, have their seat in the hypothalmus of the brain, and it is likely that in alcoholics this portion of the brain suffers from deranged metabolism?

—that butter is one of our oldest foods, going back over 2000 years ago when it was churned in animal skins?

—that Texas A & M biology experiments point up the vitamin biotin as a must for pregnant mothers to prevent the production of lighter babies suffering from heart abnormalities, damaged livers and underdeveloped kidneys?

—that a product of the sea, called algin, often replaces gelatin as a stabilizer for ice cream and chocolate milk?

—that carrots and asparagus were used as medicine by the ancient Romans and Greeks?

—that five ounces of American cheese provide you with the same amount of protein and calcium as one quart of whole milk?

—that there are about 20 million Americans at a time, on a constant turnover basis, cutting their calorie intake—and that now over 200 food and beverage items are available that would appeal to these dieters?

THINGS YOU'LL LIKE TO READ

Practical Nutrition—Alice B. Peyton. J. B. Lippincott Co. Philadelphia. 1957. $3.60.

This book is primarily a textbook for student nurses and has been written around the theme of better living through planning adequate diets for health and in sickness, and the need to learn to budget and buy wisely. The subject matter is divided into three sections: Normal Nutrition, Diet Therapy, and Food Economics. Information on infant feeding is well presented.

Body Measurements and Human Nutrition—Joseph Brozek, Ed., Wayne State University Press. Detroit. 1956. $3.50.

Dr. Brozek has edited the eleven papers of the Harvard 1955 Conference on the Role of Body Measurements in the Evaluation of Human Nutrition. For scientists concerned with nutrition and growth the foreword by Dr. Ancel Keys, concisely presents recommendations and directions for actual body measurements in nutritional work with adults and children.

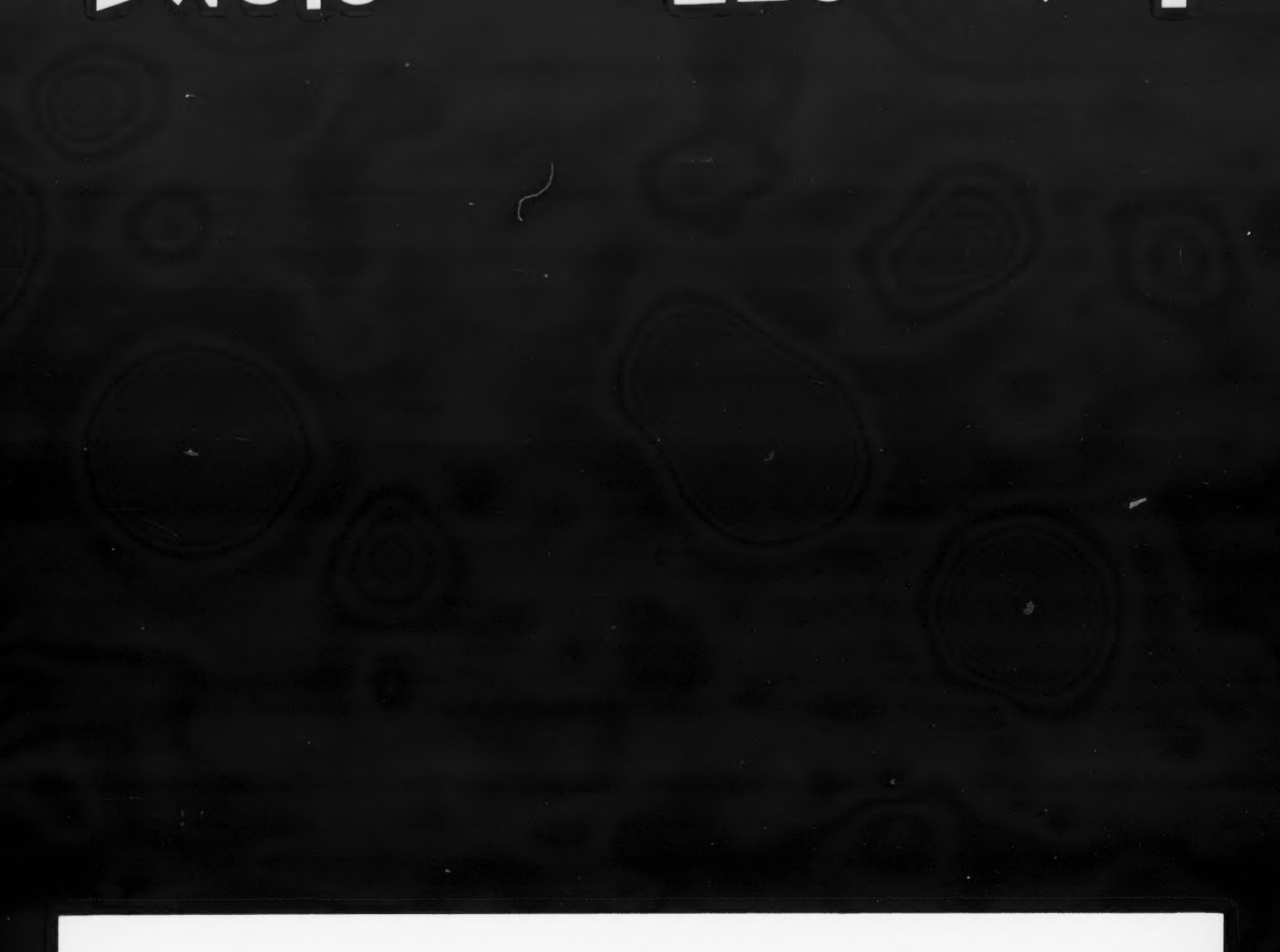
TEEN-AGERS AND HOW THEY EAT

(Continued from Page Twenty-three)

"empty calorie" variety during the day and a high percentage had two or three. 5) Only slightly more than one-third of the group ate one or more eggs in a day's meals. About 75 percent ate at least one serving of meat, poultry or fish. 6) About one-half (47 percent) of the girls and 20 percent of the boys ate no breakfast on the survey date. A large percentage of those having breakfast had a poor one.

A separate study made by an Ohio State University graduate student of 212 tenth-grade girls in selected parochial schools in Columbus showed a pattern of eating very similar to that found in the state survey, except that their consumption of milk and eggs was even lower and only 12 percent regularly ate an adequate breakfast. In this study 40 percent gave "lack of time" and 25 percent gave "dislike of breakfast" as the reason for not eating it. Over one-third of the girls were preparing their own breakfasts. However, only one girl said that she did not eat because no one prepared the meal for her.

Studies now being made in several counties of northwest Ohio under the direction of Dorothy Throssell, Ohio Department of Health nutrition consultant for that area, show considerable variation in food habits from one school to another and one county to the next. In general, these studies have shown that while teen-age girls are better consumers of the high-vitamin citrus fruits and green and yellow vegetables, boys of this age group are much better users than girls of protein-rich foods such as milk, cheese, meat, poultry and fish.

It is logical to suppose that where milk, eggs, meat and fresh vegetables are produced these essential items of diet would be used more often than in cities where they must always be purchased and where, by some standards, they are considered expensive. Analysis of the Ohio survey figures does not support this theory. A comparison of children from rural schools with children from city schools revealed no essential differences in the eating patterns of these groups. Neither could evidence be found that dietaries of children from low and moderate income families were inferior to those of children from families of the higher income brackets.

Studies will be continued as part of nutrition consultants' regular services to local health departments and the communities they serve. It is gratifying that teachers, school administrators, parents and even the teen-agers themselves are showing marked interest in the findings. Many are now engaged in programs designed to improve the nutritional status and knowledge of all school children.